

REMARKS

Claims 1, 2, 8, and 9 were examined and reported in the Office Action. Claims 1, 2, 8, and 9 are rejected. Claims 1 and 8 are amended. Claims 1, 2, 8, and 9 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 103(a)

A. It is asserted in the Office Action that claims 1-2 and 8-9 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over U. S. Patent No. 7,145,412 issued to Hunt et al ("Hunt"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2142

[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974))." "*All words in a claim must be considered in judging the patentability of that claim against the prior art.*" (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Hunt discloses depositing BST by CCVD on c-plane sapphire, where the deposition is epitaxial in at least local regions and the crystalline lattice is substantially 1,1,1. This disclosure, however, does not make it obvious to grow a BST oriented in a 1,1,1 direction on an MgO

substrate. If Hunt were to clearly teach this Hunt would have disclosed such an embodiment. On the contrary, Hunt does not teach, disclose or suggest growing a BST by pulsed laser ablation, nor any other thin film as well. Further, none of the Examples in Hunt use MgO as a substrate. Moreover, on pages 2 and 3 of the Office Action it is asserted that "Hunt does not teach the BST film as being in a (111) direction when applied to an MgO substrate." Therefore, the assertion on page 2 (last paragraph) of the Office Action asserting that "Hunt clearly teaches BST applied in the (111) direction" is contradicted.

Additionally, Hunt does not teach, disclose or suggest Applicant's: amended claim 1 limitations of

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate

nor amended claim 8 limitations of

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate.

Moreover, by viewing the disclosure of Hunt, one can not jump to the conclusion of obviousness without impermissible hindsight. According to MPEP 2142,

[t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight'

based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

Applicant submits that without first reviewing Applicant's disclosure, no thought, whatsoever, would have been made to either

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate

or

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate.

Since Hunt does not teach, disclose or suggest all the limitations of Applicant's amended claims 1 and 8, as listed above, Applicant's amended claims 1 and 8 are not obvious over Hunt in view of no other prior art since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from amended claims 1 and 8, namely claims 2, and 9, respectively, would also not be obvious over Hunt in view of no other prior art for the same reason.

Accordingly, withdrawal of the 35 U.S.C. §103 (a) rejections for claims 1-2 and 8-9 are respectfully requested.

B. It is asserted in the Office Action that claims 1-2 and 8-9 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Hunt et al., in view of U. S. Patent Application No. 2003/0022030 by Chang ("Chang"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant has addressed Hunt regarding independent claims 1 and 8 above in section I(A).

It is asserted in the Office Action that asserts “Chang teaches a dielectric device formed of BST (paragraph [0006]) in a (111) orientation (paragraph [0032]) applied to an MgO substrate.” Paragraph [0006], however, asserts “such as BST (i.e., any porous phase between partially crystallized amorphous phase and fully crystallized randomly oriented phase).” Paragraph [0032] asserts “[t]he lattice structure of the BST film with BST buffer layer was determined as a cubic phase ($a_0=3.966 \text{ \AA}$) based on XRD patterns of 11 reflection peaks (i.e., (100), (110), (111), (200), (210), (211), (220), (310), (311), (222), and (321) peaks) from the BST film.” Chang deals with using a BST buffer to deposit a BST film. Chang does not teach, disclose or suggest growing a BST thin film on an MgO substrate.

Therefore, even if Chang were combined with Hunt, the resulting invention would still not teach, disclose or suggest Applicant’s limitations of

a ferroelectric/dielectric ($\text{Ba}_{1-x}\text{Sr}_x$) TiO_3 (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate

or

a ferroelectric/dielectric ($\text{Ba}_{1-x}\text{Sr}_x$) TiO_3 (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate.

Since neither Hunt, Chang, and therefore, nor the combination of the two teach, disclose or suggest all the limitations of Applicant's amended claims 1 and 8, as listed above, Applicant's amended claims 1 and 8 are not obvious over Hunt in view of Chang since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from amended claims 1 and 8, namely claims 2, and 9, respectively, would also not be obvious over Hunt in view of Chang for the same reason.

Accordingly, withdrawal of the 35 U.S.C. §103 (a) rejections for claims 1-2 and 8-9 are respectfully requested.

C. It is asserted in the Office Action that claims 1-2 and 8-9 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Chang in view of Hunt. Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant has addressed Hunt regarding independent claims 1 and 8 above in section I(A). Applicant has addressed Chang regarding independent claims 1 and 8 above in section I(B). Similarly as asserted above, even if Hunt were combined with Chang, the resulting invention would still not teach, disclose or suggest Applicant's limitations of

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate

or

a ferroelectric/dielectric (Ba_{1-x}Sr_x)TiO₃ (BST) thin film oriented in a (111) direction which is grown on the MgO substrate by pulsed laser ablation, wherein x is a number and represents a composition ratio; and an interdigital single layer electrode pattern formed on the ferroelectric/dielectric BST thin film and separated from the MgO substrate.

Since neither Chang, Hunt, and therefore, nor the combination of the two teach, disclose or suggest all the limitations of Applicant's amended claims 1 and 8, as listed above, Applicant's amended claims 1 and 8 are not obvious over Chang in view of Hunt since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from amended claims 1 and 8, namely claims 2, and 9, respectively, would also not be obvious over Chang in view of Hunt for the same reason.

Accordingly, withdrawal of the 35 U.S.C. §103 (a) rejections for claims 1-2 and 8-9 are respectfully requested.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely 1-2 and 8-9, patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees. If a telephone interview would expedite the prosecution of this Application, the Examiner is invited to contact the undersigned at (310) 207-3800.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

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By: _____

Steven Laut, Reg. No. 47,736

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below to the United States Patent and Trademark Office.

Jean Svoboda

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